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NATIONAL EUTROPHICATION SURVEY

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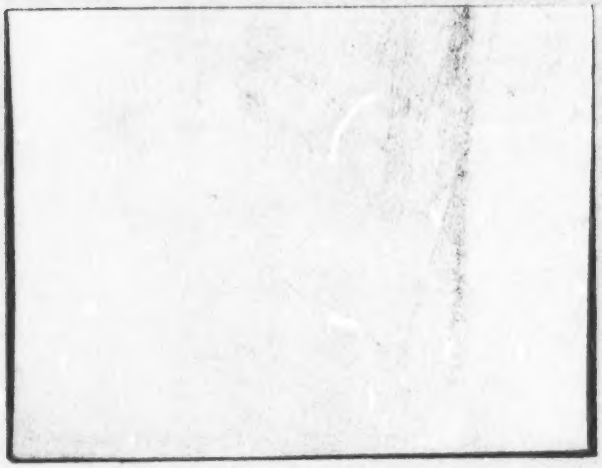

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REPORT
ON
LAKE GREENWOOD
GREENWOOD, LAURENS, AND NEWBERRY COUNTIES
SOUTH CAROLINA
EPA REGION IV
WORKING PAPER No. 431

WITH THE COOPERATION OF THE
SOUTH CAROLINA DEPARTMENT OF HEALTH AND
ENVIRONMENTAL CONTROL
AND THE
SOUTH CAROLINA NATIONAL GUARD

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16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

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ii

CONTENTS

	Page
Foreword	ii
List of South Carolina Study Lakes	iv
Lake and Drainage Area Map	v
Sections	
I. Conclusions	1
II. Lake and Drainage Basin Characteristics	4
III. Lake Water Quality Summary	5
IV. Nutrient Loadings	9
V. Literature Reviewed	15
VI. Appendices	16

FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's freshwater lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the South Carolina Department of Health and Environmental Control for professional involvement, to the South Carolina National Guard for conducting the tributary sampling phase of the Survey, and to those South Carolina wastewater treatment plant operators who voluntarily provided effluent samples and flow data.

The staff of the South Carolina Bureau of Wastewater and Stream Quality Control provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

Major General Robert L. McCrady, the Adjutant General of South Carolina, and Project Officer Lt. Colonel John P. DuPre (Retired), who directed the volunteer efforts of the South Carolina National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF SOUTH CAROLINA

NAME	COUNTY
Clark Hill	Abbeville, McCormick, SC; Columbia, Elbert, Lincoln, McDuffie, Wilks, GA
Fishing Creek	Chester, Lancaster
Greenwood	Greenwood, Laurens, Newberry
Hartwell	Anderson, Oconee, Pickens, SC; Franklin, Hart, Stephens, GA
Keowee	Oconee, Pickens
Marion	Berkeley, Calhoun, Claredon, Orangeburg, Sumter
Moultrie	Berkeley
Murray	Lexington, Newberry, Richland, Saluda
Robinson	Chesterfield, Darlington
Saluda	Greenville, Pickens
Secession	Abbeville, Anderson
Wateree	Fairfield, Kershaw, Lancaster
William C. Bowen	Spartanburg
Wylie	York, SC; Gaston, Mecklenburg, NC

STP near GREENVILLE 5 Km.
Simpsonville
Piedmont
Fountain Inn
West Pelzer
S.C.
Map Location
Williamston
Reedy River
South Rabon Cr.
North Rabon Cr.
Belton
GREENVILLE CO.
LAURENS CO.
Laurens
34°15'
Broad Mouth Cr.
Boyd Mill Pd.
Honea Path
Saluda River
Ware Shoals
ANDERSON CO.
ABBEVILLE CO.
A2
D1
Long Lick Br.
Waterloo
E1
Turkey Cr.
B1
LAKE GREENWOOD
C4
F1
34°00'
Greenwood
Ninety Six
A1
LAKE GREENWOOD
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Direct Drainage Area Boundary
0 10 20 Km.
0 10 Mi.
Scale
82°30'
82°15'
82°00'

LAKE GREENWOOD

STORET NO. 4504

I. CONCLUSIONS

A. Trophic Condition:

Survey data show that Lake Greenwood is eutrophic. It ranked twelfth in overall trophic quality when the 13 South Carolina lakes sampled in 1973 were compared using a combination of six parameters*. Ten of the lakes had less median total phosphorus, nine had less and one had the same median dissolved phosphorus, 11 had less median inorganic nitrogen, seven had less mean chlorophyll a, and seven had greater mean Secchi disc transparency. Marked depression or depletion of dissolved oxygen with depth occurred at all four sampling stations in July and September.

Survey limnologists did not observe surface concentrations of algae or aquatic macrophytes at any of the three sampling times.

B. Rate-Limiting Nutrient:

There was a significant loss of nutrients in the assay sample between the time of collection and the beginning of the assay, and the results are not representative of conditions in the lake at the time the sample was taken (03/28/74). However, the lake data indicate phosphorus limitation at all sampling times.

C. Nutrient Controllability:

1. Point sources--The phosphorus contributions of the point sources considered in this report amounted to an estimated 86.2%

* See Appendix A.

of the total load reaching Lake Greenwood during the sampling year. The Greenville plant contributed over 76% of the load, and the remaining 12 plants collectively contributed 9.8%.

There are at least 69 generally small domestic and industrial point sources in the drainage that were not sampled during the year (see pages 10-11). Therefore, it is likely that the actual point-source contributions were greater than indicated above, although the phosphorus export rates of the sampled tributaries indicate the phosphorus contributions of these sources probably were relatively small (see below).

The phosphorus loading of 8.69 g/m^2 measured during the sampling year is almost eight times that proposed by Vollenweider (Vollenweider and Dillon, 1974) as a eutrophic loading (see page 14). While even complete removal of phosphorus at the point sources considered in this report would still leave a loading of 1.19 $g/m^2/yr$, it is likely that a high degree of phosphorus removal at the significant point sources would result in an improvement in the trophic condition of Greenwood Lake and benefit downstream Lake Murray* as well.

On the basis of nutrient retention in Lake Greenwood during the sampling year (77.3% P and 38.5% N), it is calculated that the point sources impacting this lake indirectly contributed 78,285 kg P and 577,830 kg N to downstream Lake Murray.

* Working Paper No. 436.

2. Non-point sources--The estimated phosphorus contributions of non-point sources accounted for 13.8% of the total load reaching the lake during the sampling year. The Saluda River contributed 5.3%, Reedy River contributed an estimated 3.9%, and the remaining four tributaries collectively contributed 2.7% of the total load. Minor tributaries and immediate drainage contributed an estimated 1.7% of the total.

With the exception of Cane Creek, the phosphorus export rates of the tributaries were relatively low (page 14) and compare fairly well with the export rates of tributaries sampled elsewhere in South Carolina; e.g., the mean of the rates of Lake Keowee* tributaries was 17 kg/km^2/yr (range of 15 to 19 kg/km^2/yr).

As far as is known, none of the unsampled point sources noted above discharge to Cane Creek, and the higher export rate of this stream probably is due to land-use practices, although septic tanks at Waterloo may contribute to the stream load (see map, page v).

* Working Paper No. 433.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

A. Lake Morphometry††:

1. Surface area: 46.14 kilometers^2.
2. Mean depth: 6.8 meters.
3. Maximum depth: 21.0 meters.
4. Volume: 315.403 x 10^6 m^3.
5. Mean hydraulic retention time: 74 days.

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)*	Mean flow (m^3/sec)*
Saluda River	1,471.1	28.04
Turkey Creek	117.8	1.67
Reedy River	655.3	9.97
Rabon Creek	326.3	4.63
Long Lick Branch	20.3	0.29
Cane Creek	60.3	0.86
Minor tributaries & immediate drainage -	281.2	4.00
Totals	2,932.3	49.46

2. Outlet -

Saluda River	2,978.4**	49.46**

C. Precipitation***:

1. Year of sampling: 139.5 centimeters.
2. Mean annual: 116.8 centimeters.

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† Table of metric conversions--Appendix B.
†† Mast, 1974; King, 1974.
* For limits of accuracy, see Working Paper No. 175, "...Survey Methods, 1973-1976".
** Includes area of lake; outflow adjusted to equal sum of inflows.
*** See Working Paper No. 175.

III. LAKE WATER QUALITY SUMMARY

Lake Greenwood was sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from a number of depths at four stations on the lake (see map, page v). During each visit, a single depth-integrated (4.6 m to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the first visit, a single 18.9-liter depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 17.1 meters at station 1, 13.7 meters at station 2, 7.3 meters at station 3, and 5.8 meters at station 4.

The sampling results are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR LAKE GREENWOOD
STORET CODE 4504

PARAMETER	1ST SAMPLING (3/28/73) 4 SITES RANGE	MEAN	MEDIAN	2ND SAMPLING (7/ 9/73) 4 SITES RANGE	MEAN	MEDIAN	3RD SAMPLING (9/18/73) 4 SITES RANGE	MEAN	MEDIAN
TEMP (C)	14.0 - 15.8	15.0	15.2	13.9 - 32.7	26.6	28.4	17.8 - 28.7	25.0	24.9
DISS OXY (MG/L)	7.5 - 9.3	8.4	8.5	0.5 - 9.5	4.2	2.8	0.0 - 6.6	3.0	3.4
CNDCTVY (MCHOMO)	50. - 70.	54.	55.	50. - 120.	66.	60.	39. - 124.	72.	75.
PH (STAND UNITS)	7.5 - 8.1	7.7	7.7	6.2 - 8.9	7.4	6.8	6.4 - 7.4	6.7	6.7
TOT ALK (MG/L)	10. - 15.	12.	12.	16. - 42.	24.	21.	10. - 34.	20.	22.
TOT P (MG/L)	0.061 - 0.155	0.091	0.087	0.018 - 0.126	0.044	0.031	0.019 - 0.264	0.092	0.045
ORTHO P (MG/L)	0.011 - 0.034	0.019	0.019	0.003 - 0.035	0.009	0.006	0.005 - 0.046	0.017	0.011
NO2+NO3 (MG/L)	0.320 - 0.690	0.397	0.380	0.050 - 0.430	0.157	0.095	0.030 - 0.420	0.133	0.045
AMMONIA (MG/L)	0.030 - 0.110	0.065	0.060	0.060 - 0.540	0.213	0.090	0.040 - 1.860	0.381	0.195
KJEL N (MG/L)	0.200 - 0.500	0.327	0.300	0.320 - 1.300	0.640	0.600	0.200 - 2.500	0.911	0.800
INORG N (MG/L)	0.360 - 0.780	0.482	0.470	0.110 - 0.960	0.171	0.305	0.070 - 1.980	0.513	0.425
TOTAL N (MG/L)	0.540 - 1.090	0.724	0.700	0.410 - 1.680	0.797	0.750	0.230 - 2.540	1.044	1.040
CHLRPYL A (MG/L)	4.1 - 7.2	5.7	5.8	4.9 - 13.9	10.5	11.5	1.7 - 12.3	8.2	9.5
SECCHI (METERS)	0.3 - 0.8	0.5	0.5	0.9 - 1.8	1.4	1.5	0.1 - 1.1	0.8	1.0

B. Biological Characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
03/28/73	1. Cryptomonas sp.	273
	2. Centric diatoms	182
	3. Melosira sp.	137
	4. Oscillatoria sp.	68
	5. Mallomonas sp.	46
	Other genera	205
	Total	911
07/09/73	1. Lyngbya sp.	2,456
	2. Cyclotella sp.	665
	3. Nitzschia sp.	462
	4. Flagellates	433
	5. Raphidiopsis sp.	433
	Other genera	2,429
	Total	6,878
09/18/73	1. Raphidiopsis sp.	9,263
	2. Dactylococcopsis sp.	1,693
	3. Oscillatoria sp.	796
	4. Anabaenopsis sp.	697
	5. Lyngbya sp.	399
	Other genera	1,594
	Total	14,442

2. Chlorophyll a -

Sampling Date	Station Number	Chlorophyll a (µg/l)
03/28/73	1	5.2
	2	7.2
	3	6.4
	4	4.1

Sampling Date	Station Number	Chlorophyll a (µg/l)
07/09/73	1	9.2
	2	13.9
	3	4.9
	4	13.9
09/18/73	1	8.0
	2	11.0
	3	12.3
	4	1.7

C. Limiting Nutrient Study:

A 45% loss of phosphorus occurred in the assay sample between the time of collection and the beginning of the assay. Therefore, the results are not representative of conditions in the lake at the time the sample was taken (03/28/73). However, the lake data indicate phosphorus limitation at all sampling times; i.e., the mean inorganic nitrogen/orthophosphorus ratios were 25/1 or greater at all sampling times, and phosphorus limitation would be expected.

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the South Carolina National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff month of January when two samples were collected. Sampling was begun in February, 1973, and was completed in February, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the South Carolina District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

Except for the Reedy River, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Stream loads shown are those measured minus point-source loads, if any.

Nutrient loads for the Reedy River and unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the nutrient loads at stations D-1 and E-1, in $kg/km^2/year$, and multiplying the means by the Reedy River and ZZ areas in km^2.

The operators of the Belton, Greenville, Ware Shoals #2, and West Pelzer wastewater treatment plants provided monthly effluent samples and corresponding flow data. The operators of the Honea Path #1 and Ware Shoals #1 plants provided samples but only estimated flows, and the other listed communities did not participate;

* See Working Paper No. 175.

nutrient loads from these sources were estimated at 1.134 kg P and 3.401 kg N/capita/year.

A. Waste Sources*:

1. Known municipal -

Name	Pop. Served	Treatment	Mean Flow (m^3/d)	Receiving Water
Belton	1,200	stab. pond	836.5	Broad Mouth Cr.
Easley				
Georges Creek	2,800	stab. pond	1,059.8	Georges Cr./ Saluda R.
Glenwood	2,000	stab. pond	757.0	Br. of Brushy Cr.
Brushy Creek	3,000	stab. pond	1,135.5	Brushy Cr./ Saluda R.
Greenville	115,000	tr. filter	98,569.0	Reedy River
Honea Path				
#1	4,000	stab. pond	927.3	Broad Mouth Cr.
#2	2,000	stab. pond	757.0	Clatworthy Cr./ Saluda R.
Piedmont	1,405	act. sludge	757.0	Grove Cr./ Saluda R.
Ware Shoals				
#1	1,600	stab. pond	832.7	Turkey Creek
#2**	1,200	act. sludge	17,513.2	Saluda River
West Pelzer	1,000	act. sludge	295.2	Saluda River
Williamston				
#1	1,300	stab. pond	283.9	Saluda River
#2	2,500	act. sludge	1,419.4	Big Creek

In addition to the above sources, there are at least two other municipal plants in the Lake Greenwood drainage (i.e., Mauldin and Pelzer; combined PE of about 600), and the Western Carolina Regional Sewer Authority operates 11 mostly small wastewater treatment facilities, including Piedmont. Also, there are at least 27 privately-owned domestic waste treatment plants in the drainage. The significance of these sources is not known, but the nutrient contributions

* Anonymous, 1971; Foley, 1976; survey questionnaires (page 15).
** More than 25% of the waste load is industrial.

of most of them are included in the loads attributed to the sampled tributaries.

2. Known industrial--There are at least 29 industrial waste treatment facilities in the drainage, but the nutrient significance of these sources is not known.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/ yr	% of total
a. Tributaries (non-point load) -		
Saluda River	21,205	5.3
Turkey Creek	1,040	0.3
Reedy River	15,725	3.9
Rabon Creek	6,875	1.7
Long Lick Branch	545	0.1
Cane Creek	2,165	0.5
b. Minor tributaries & immediate drainage (non-point load) -	6,750	1.7
c. Known municipal STP's -		
Easley		
Georges Creek	3,175	0.8
Glenwood	2,270	0.6
Brushy Creek	3,400	0.8
Greenville	306,530	76.5
Honea Path		
#1	4,535	1.1
#2	2,270	0.6
Piedmont	1,595	0.4
Ware Shoals		
#1	1,815	0.4
#2	12,230	3.1
West Pelzer	1,100	0.3
Williamston		
#1	1,475	0.4
#2	2,835	0.7
d. Septic tanks - Unknown	?	-
e. Industrial - Unknown	?	-
f. Direct precipitation* -	805	0.2
Total	400,750	100.0

2. Outputs -

Lake outlet - Saluda River 90,815

3. Net annual P accumulation - 309,935 kg.

* See Working Paper No. 175.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/ yr	% of total
a. Tributaries (non-point load) -		
Saluda River	978,085	41.5
Turkey Creek	25,600	1.1
Reedy River	165,790	7.0
Rabon Creek	101,970	4.3
Long Lick Branch	3,920	0.2
Cane Creek	18,850	0.8
b. Minor tributaries & immediate drainage (non-point load) -	71,145	3.0
c. Known municipal STP's -		
Belton	6,670	0.3
Easley		
Georges Creek	9,525	0.4
Glenwood	6,800	0.3
Brushy Creek	10,205	0.4
Greenville	815,995	34.6
Honea Path		
#1	13,605	0.6
#2	6,800	0.3
Piedmont	4,780	0.2
Ware Shoals		
#1	5,440	0.2
#2	45,315	1.9
West Pelzer	2,300	0.1
Williamston		
#1	4,420	0.2
#2	8,500	0.4
d. Septic tanks - Unknown	?	-
e. Industrial - Unknown	?	-
f. Direct precipitation* -	49,815	2.1
Total	2,355,530	100.0

2. Outputs -

Lake outlet - Saluda River 1,448,195

3. Net annual N accumulation - 907,335 kg.

* See Working Paper No. 175.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km²/yr	kg N/km²/yr
Saluda River	14	665
Turkey Creek	9	217
Rabon Creek	21	313
Long Lick Branch	27	193
Cane Creek	36	313

E. Yearly Loads:

In the following table, the existing phosphorus loadings are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Essentially, his "dangerous" loading is one at which the receiving water would become eutrophic or remain eutrophic; his "permissible" loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic loading would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m²/yr	8.69	6.72	51.1	19.7

Vollenweider phosphorus loadings (g/m²/yr) based on mean depth and mean hydraulic retention time of Lake Greenwood:

"Dangerous" (eutrophic loading)	1.12
"Permissible" (oligotrophic loading)	0.56

V. LITERATUKE REVIEWED

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VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P
4503	FISHING CREEK RESERVOIR	0.143	0.535	483.000	2.811	10.200	0.051
4504	LAKE GREENWOOD	0.061	0.470	463.917	8.150	15.000	0.011
4505	LAKE HARTWELL	0.013	0.130	422.000	6.157	15.000	0.004
4506	LAKE MARION	0.055	0.280	470.176	8.728	14.900	0.010
4507	LAKE MURRAY	0.024	0.260	424.905	6.478	15.000	0.007
4508	LAKE ROBINSON	0.014	0.260	458.778	8.611	14.000	0.005
4510	LAKE WATEREE	0.094	0.450	475.667	8.408	14.100	0.034
4511	LAKE WYLIE	0.045	0.380	462.222	5.422	14.800	0.013
4512	LAKE MOULTRIE	0.026	0.200	455.36	8.800	11.200	0.006
4513	LAKE KEOWEE	0.008	0.170	371.750	2.833	15.000	0.003
4514	LAKE SECESSION	0.057	0.355	462.778	10.722	15.000	0.006
4515	SALUDA LAKE	0.046	0.230	476.833	1.517	10.800	0.006
4516	LAKE WILLIAM C. BOWEN	0.022	0.360	459.889	3.911	15.000	0.007

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
4503	FISHING CREEK RESERVOIR	0 (0)	0 (0)	0 (0)	92 (11)	100 (12)	0 (0)	192
4504	LAKE GREENWOOD	17 (2)	8 (1)	33 (4)	42 (5)	21 (0)	25 (3)	146
4505	LAKE HARTWELL	92 (11)	100 (12)	92 (11)	58 (7)	21 (0)	92 (11)	455
4506	LAKE MARION	33 (4)	50 (6)	25 (3)	17 (2)	50 (6)	33 (4)	208
4507	LAKE MURRAY	67 (8)	62 (7)	83 (10)	50 (6)	21 (0)	46 (5)	329
4508	LAKE ROBINSON	83 (10)	62 (7)	67 (8)	25 (3)	75 (9)	83 (10)	395
4510	LAKE WATEREE	8 (1)	17 (2)	17 (2)	33 (4)	67 (8)	8 (1)	150
4511	LAKE WYLIE	50 (6)	25 (3)	50 (6)	67 (8)	58 (7)	17 (2)	267
4512	LAKE MOULTRIE	58 (7)	83 (10)	75 (9)	8 (1)	83 (10)	71 (8)	378
4513	LAKE KEOWEE	100 (12)	92 (11)	100 (12)	83 (10)	21 (0)	100 (12)	496
4514	LAKE SECESSION	25 (3)	42 (5)	42 (5)	0 (0)	21 (0)	58 (7)	188
4515	SALUDA LAKE	42 (5)	75 (9)	8 (1)	100 (12)	92 (11)	71 (8)	388
4516	LAKE WILLIAM C. BOWEN	75 (9)	33 (4)	58 (7)	75 (9)	21 (0)	46 (5)	308

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	4513	LAKE KEOWEE	496
2	4505	LAKE HARTWELL	455
3	4508	LAKE ROBINSON	395
4	4515	SALUDA LAKE	388
5	4512	LAKE MOULTRIE	378
6	4507	LAKE MURRAY	329
7	4516	LAKE WILLIAM C. BOWEN	308
8	4511	LAKE WYLIE	267
9	4506	LAKE MARION	208
10	4503	FISHING CREEK RESERVOIR	192
11	4514	LAKE SECESSION	188
12	4510	LAKE WATEREE	150
13	4504	LAKE GREENWOOD	146

APPENDIX B

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR SOUTH CAROLINA 04/27/76

LAKE CODE 4504 LAKE GREENWOOD

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 2978.5

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
4504A1	2978.5	60.60	66.54	78.72	69.94	50.12	41.91	36.81	36.25	33.98	36.25	38.23	45.87	49.50
4504A2	1471.1	33.13	40.21	45.31	40.78	29.17	23.33	21.97	20.44	17.75	18.32	20.30	26.65	28.04
4504B1	117.8	2.38	2.94	3.71	2.41	1.42	0.96	1.13	0.88	0.74	0.76	1.25	1.59	1.67
4504C1	655.3	12.63	15.72	18.32	14.53	9.06	7.31	7.08	6.88	5.72	6.23	7.28	9.26	9.97
4504D1	326.3	6.57	8.13	10.25	6.68	3.91	2.66	3.34	2.49	1.84	2.01	3.45	4.39	4.63
4504E1	20.3	0.40	0.51	0.62	0.42	0.25	0.17	0.20	0.17	0.11	0.14	0.23	0.28	0.29
4504F1	60.3	1.22	1.50	1.40	1.25	0.71	0.48	0.57	0.45	0.37	0.40	0.65	0.82	0.86
4504ZZ	281.2	5.69	7.02	8.86	5.78	3.37	2.32	2.89	2.15	1.59	1.73	2.97	3.79	4.00

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 2978.5
SUM OF SUB-DRAINAGE AREAS = 2932.4

TOTAL FLOW IN = 595.24
TOTAL FLOW OUT = 595.22

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4504A1	2	73	87.782	24	28.317				
	3	73	99.109	21	118.931				
	4	73	124.028	15	116.099				
	5	73	76.455	15	52.386				
	6	73	87.782	17	86.366				
	7	73	43.042	15	11.327				
	8	73	42.475	11	62.297				
	9	73	79.287	17	121.762				
	10	73	36.246	14	15.093				
	11	73	40.493	17	12.884				
	12	73	48.422	20	39.077				
	1	74	114.117	12	132.806	26	87.782		
	2	74	93.446	12	70.792				
4504A2	2	73	54.045	24	30.865				
	3	73	67.394	21	72.208				
	4	73	74.756	15	53.236				
	5	73	56.634	15	45.873				
	6	73	48.984	17	43.325				
	7	73	30.016	15	22.653				
	8	73	26.193	11	22.087				
	9	73	32.868	17	46.156				
	10	73	18.123	14	13.167				
	11	73	14.725	17	12.743				
	12	73	32.848	20	14.987				
	1	74	58.899	12	36.246	26	48.139		
	2	74	50.976	12	48.139				

TRIBUTARY FLOW INFORMATION FOR SOUTH CAROLINA 04/27/76

LAKE CODE 4504 LAKE GREENWOOD

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4504D1	2	73	3.398	24	1.416				
	3	73	2.549	21	1.699				
	4	73	3.851	15	1.416				
	5	73	0.991	15	1.133				
	6	73	2.549	17	1.274				
	7	73	0.623	15	0.850				
	8	73	0.765	11	0.623				
	9	73	2.832	17	1.841				
	10	73	0.566	14	0.425				
	11	73	0.510	17	0.425				
	12	73	0.850	20	1.161				
	1	74	2.549	12	1.926	26	2.435		
	2	74	3.964	12	1.218				
4504C1	2	73	22.887	24	8.637				
	3	73	25.485	21	21.946				
	4	73	27.241	15	16.767				
	5	73	17.698	15	11.610				
	6	73	13.592	17	10.619				
	7	73	8.212	15	7.504				
	8	73	7.221	11	7.221				
	9	73	15.574	17	19.114				
	10	73	6.654	14	6.513				
	11	73	6.513	17	6.938				
	12	73	9.911	20	7.646				
	1	74	22.887	12	13.026	26	22.653		
	2	74	18.123	12	14.158				
4504D1	2	73	9.486	24	3.823				
	3	73	11.893	21	4.248				
	4	73	10.817	15	2.124				
	5	73	5.663	15	3.540				
	6	73	7.079	17	3.681				
	7	73	2.832	15	2.549				
	8	73	2.549	11	1.841				
	9	73	10.760	17	5.663				
	10	73	2.124	14	1.218				
	11	73	1.416	17	1.218				
	12	73	3.398	20	3.288				
	1	74	7.787	12	5.239	26	6.768		
	2	74	11.044	12	3.398				
4504E1	2	73	0.566	24	0.255				
	3	73	0.425	21	0.283				
	4	73	0.651	15	0.227				
	5	73	0.170	15	0.198				
	6	73	0.283	17	0.198				
	7	73	0.113	15	0.142				
	8	73	0.142	11	0.113				
	9	73	0.510	17	0.340				
	10	73	0.085	14	0.085				
	11	73	0.085	17	0.085				
	12	73	0.142	20	0.198				
	1	74	0.453	12	0.340	26	0.425		
	2	74	0.680	12	0.198				

TRIBUTARY FLOW INFORMATION FOR SOUTH CAROLINA 04/27/76

LAKE CODE 4504 LAKE GREENWOOD

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4504F1	2	73	1.841	24	0.736				
	3	73	1.274	21	0.850				
	4	73	1.982	15	0.708				
	5	73	0.538	15	0.623				
	6	73	1.133	17	0.566				
	7	73	0.283	15	0.425				
	8	73	0.283	11	0.340				
	9	73	1.557	17	0.991				
	10	73	0.283	14	0.227				
	11	73	0.255	17	0.227				
	12	73	0.425	20	0.595				
	1	74	1.331	12	0.991	26	1.246		
	2	74	2.039	12	0.623				
4504Z2	2	73	7.929	24	3.398				
	3	73	6.230	21	3.964				
	4	73	9.260	15	3.115				
	5	73	2.407	15	2.832				
	6	73	5.663	17	3.115				
	7	73	1.529	15	1.982				
	8	73	1.841	11	1.557				
	9	73	7.221	17	4.531				
	10	73	1.331	14	1.048				
	11	73	1.274	17	1.133				
	12	73	1.841	20	2.832				
	1	74	6.173	12	4.644	26	5.862		
	2	74	9.571	12	2.945				

APPENDIX D

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 76/04/27

450401
34 10 60.0 081 54 40.0 3
LAKE GREENWOOD
45081 SOUTH CAROLINA
038892

11EPALES 2111202
0040 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/28	12 15	0000	14.9		30	58	7.70	13	0.090	0.500	0.410	0.020
	12 15	0004	14.9	8.6		55	7.60	14	0.080	0.200	0.390	0.019
	12 15	0015	14.8	7.8		55	7.70	14	0.090	0.200	0.380	0.018
	12 15	0035	14.1	7.5		55	7.60	14	0.090	0.200	0.380	0.019
73/07/09	16 45	0000	31.6		72	60	8.30	19	0.090	0.700	0.050	0.003
	16 45	0006	30.0	8.6		72	6.50	20	0.060	0.400	0.060	0.007
	16 45	0015	28.8	6.8		58	6.20	19	0.090	0.400	0.430	0.006
	16 45	0030	19.8	0.5		58	6.50	23	0.260	0.600	0.270	0.004
	16 45	0056	13.9	0.9		50K	8.20	28	0.490	0.700	0.070	0.005
73/09/18	12 55	0000	28.0		43	74	6.70	20	0.060	0.700	0.040	0.008
	12 55	0005	27.8	5.8		73	6.70	19	0.060	0.400	0.030	0.005
	12 55	0015	26.1	1.6		80	6.70	22	0.250	0.600	0.090	0.008
	12 55	0030	24.1	0.0		90	6.50	26	0.520	0.800	0.060	0.017
	12 55	0038	19.8	0.0		85	6.50	25	0.750	1.000	0.040	0.011

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/28	12 15	0000	0.066	5.2
	12 15	0004	0.061	
	12 15	0015	0.061	
	12 15	0035	0.061	
73/07/09	16 45	0000	0.018	9.2
	16 45	0006	0.023	
	16 45	0015	0.030	
	16 45	0030	0.034	
	16 45	0056	0.048	
73/09/18	12 55	0000	0.020	8.0
	12 55	0005	0.019	
	12 55	0015	0.030	
	12 55	0030	0.041	
	12 55	0038	0.033	

< VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

450402
34 13 45.0 081 57 50.0 3
LAKE GREEN#000
45059 SOUTH CAROLINA
030692

11EPALES 2111202
0037 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/28	12 45	0000	15.6		16	55	7.80	13	0.090	0.500	0.400	0.019
	12 45	0004	15.6	8.9		55	7.70	11	0.080	0.300	0.400	0.019
	12 45	0015	15.2	8.4		55	7.80	12	0.090	0.300	0.400	0.020
	12 45	0033	14.2	8.6		55	7.60	11	0.110	0.300	0.400	0.019
73/07/09	17 15	0000	32.0		36	59	8.60	18	0.070	0.500	0.060	0.004
	17 15	0006	30.0	9.0		51	7.70	17	0.060	0.400	0.050	0.005
	17 15	0015	27.6	4.8		60	6.80	19	0.080	0.400	0.120	0.005
	17 15	0025	23.0	0.6		60	6.30	20	0.170	0.400	0.320	0.006
	17 15	0036	17.7	1.0		70	6.60	25	0.320	0.320	0.090	0.006
73/09/18	13 15	0000	28.7		42	79	6.90	22	0.040	0.500	0.030	0.010
	13 15	0005	28.0	6.6		73	7.00	29	0.040	0.200K	0.030	0.009
	13 15	0015	27.5	4.8		75	6.90	21	0.130	0.200K	0.040	0.012
	13 15	0025	24.5	2.2		53	6.90	11	0.220	0.800	0.260	0.022
	13 15	0035	21.1	0.8		124	6.50	32	1.680	2.300	0.040	0.010
	13 15	0045	17.8	0.0		117	6.60	34	1.060	2.500	0.040	0.008

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/28	12 45	0000	0.087	7.2
	12 45	0004	0.086	
	12 45	0015	0.099	
	12 45	0033	0.105	
73/07/09	17 15	0000	0.023	13.9
	17 15	0006	0.023	
	17 15	0015	0.025	
	17 15	0025	0.030	
	17 15	0036	0.031	
73/09/18	13 15	0000	0.022	11.0
	13 15	0005	0.023	
	13 15	0015	0.029	
	13 15	0025	0.130	
	13 15	0035	0.114	
	13 15	0045	0.108	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

450403
34 15 00.0 082 01 15.0 3
LAKE GREENWOOD
45059 SOUTH CAROLINA
030892

11EPALES 2111202
0024 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/28	13	15 0000	15.8		12	50	7.80	10K	0.110	0.500	0.370	0.019
	13	15 0004	15.7	8.6		50	7.50	10K	0.100	0.400	0.360	0.019
	13	15 0015	15.2	8.5		50	7.60	10K	0.090	0.300	0.360	0.017
	13	15 0020	14.2	8.5		50	7.70	11	0.090	0.300	0.360	0.016
73/07/09	17	35 0000	32.7		72	58	8.90	21	0.070	0.700	0.050	0.004
	17	35 0006	30.1	9.0		50K	7.80	16	0.070	0.500	0.060	0.006
	17	35 0015	25.4	1.3		80	6.50	29	0.420	0.900	0.120	0.007
	17	35 0024	22.1	1.0		80	6.50	30	0.460	0.800	0.100	0.007
73/09/18	13	40 0000	28.4		36	78	7.40	22	0.060	1.000	0.040	0.011
	13	40 0005	27.7	6.4		77	7.40	22	0.060	0.600	0.050	0.008
	13	40 0015	24.4	4.0		43	6.50	10	0.150	0.800	0.250	0.024
	13	40 0020	23.8	3.2		41	6.90	10K	0.170	0.800	0.280	0.031

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/28	13	15 0000	0.112	6.4
	13	15 0004	0.112	
	13	15 0015	0.109	
	13	15 0020	0.118	
73/07/09	17	35 0000	0.029	4.9
	17	35 0006	0.031	
	17	35 0015	0.069	
	17	35 0024	0.067	
73/09/18	13	40 0000	0.049	12.3
	13	40 0005	0.041	
	13	40 0015	0.162	
	13	40 0020	0.193	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

450404
34 21 20.0 082 05 20.0 3
LAKE GREENWOOD
45059 SOUTH CAROLINA

030892

11EPALES 2111202
0020 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/28	16 15	0000	15.6		21	50	8.10	12	0.040	0.300	0.320	0.012
	16 15	0004	15.3	9.3		50	7.80	12	0.030	0.200K	0.340	0.011
	16 15	0016	14.0	8.2		70	7.50	15	0.090	0.400	0.690	0.034
73/07/09	17 50	0000	30.9		48	60	8.90	24	0.080	0.800	0.060	0.006
	17 50	0006	30.1	9.5		50K	8.50	21	0.080	0.600	0.110	0.010
	17 50	0013	28.1	4.4		92	6.90	38	0.390	1.100	0.430	0.035
	17 50	0019	25.6	0.9		120	6.80	42	0.580	1.300	0.380	0.030
73/09/18	14 00	0000	25.3		5	39	6.50	10K	0.240	1.000	0.300	0.022
	14 00	0005	23.7	4.0		46	6.40	10K	0.250	1.000	0.350	0.046
	14 00	0015	23.3	3.6		52	6.40	10K	0.310	1.200	0.420	0.045

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/28	16 15	0000	0.066	4.1
	16 15	0004	0.062	
	16 15	0016	0.155	
73/07/09	17 50	0000	0.034	13.9
	17 50	0006	0.036	
	17 50	0013	0.108	
	17 50	0019	0.126	
73/09/18	14 00	0000	0.166	1.7
	14 00	0005	0.210	
	14 00	0015	0.264	

K VALUE KNOWN TO BE
LESS THAN INDICATED

APPENDIX E

TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 76/04/27

4504A1
34 10 00.0 085 54 30.0 4
SALUDA RIVER
4S GREENWOOD CO HWY
0/GREENWOOD LAKE 033592
ST HWY 34 BRDG 6 MI E OF NINETY SIX
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	13 30		0.340	0.370	0.105	0.036	0.085
73/03/21	11 35		0.310	0.310	0.035	0.015	0.055
73/04/15	11 45		0.310	0.400	0.085	0.040	0.085
73/05/15	12 30		0.168	0.640	0.038	0.008	0.030
73/06/17	11 55		0.126	0.890	0.037	0.017	0.030
73/07/15	10 50		0.150	0.190	0.027	0.013	0.030
73/08/11	14 55		0.010K	0.390	0.069	0.010	0.035
73/09/17	11 00		0.088	2.520	0.220	0.011	0.055
73/10/14	11 00		0.100	1.850	0.220	0.005K	0.035
73/11/17	11 45		0.252	0.500	0.128	0.028	0.050
73/12/20	10 05		0.336	0.500	0.120	0.024	0.032
74/01/12	11 25		0.320	0.500	0.080	0.044	0.130
74/01/26	11 00		0.430	0.200	0.064	0.028	0.105
74/02/12	15 15		0.500	0.500	0.060	0.030	0.075

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4564A2
34 23 30.0 082 13 20.0 4
SALUDA RIVER
45 GREENWOOD CO HWY
1/GREENWOOD LAKE 030892
US HWY 25 IN WARE SHOALS
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	13 45		0.270	0.160	0.046	0.011	0.035
73/03/21	10 15		0.230	0.255	0.022	0.021	0.070
73/04/15	10 15		0.230	0.135	0.019	0.012	0.040
73/05/15	11 00		0.220	0.860	0.029	0.022	0.065
73/06/17	10 20		0.252	2.500	0.057	0.020	0.060
73/07/15	09 05		0.280	2.100	0.082	0.019	0.050
73/08/11	13 35		0.270	0.210	0.019	0.030	0.085
73/09/17	09 30		0.330	0.560	0.046	0.023	0.085
73/10/14	09 40		0.220	0.150	0.036	0.017	0.060
73/11/17	10 30		0.252	0.150	0.024	0.028	0.050
73/12/20	08 35		0.336	0.200	0.056	0.032	0.075
74/01/12	09 45		0.290	5.300	0.036	0.152	
74/01/26	09 40		0.330	0.490	0.024	0.020	0.125
74/02/12	13 45		0.336	0.800	0.045	0.015	0.075

STORET RETRIEVAL DATE 76/04/27

450481
34 20 30.0 082 11 30.0 4
TURKEY CREEK
45 GREENWOOD CO HWY
T/GREENWOOD LAKE 030892
ST HWY 96 BRDG 4 MI SE OF WAKE SHOALS
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	13 30		0.210	0.250	0.032	0.009	0.030
73/03/21	10 00		0.210	0.420	0.025	0.015	0.050
73/04/15	10 00		0.176	0.100K	0.017	0.012	0.035
73/05/15	10 45		0.290	0.440	0.033	0.014	0.035
73/06/17	10 05		0.290	1.050	0.069	0.027	0.100
73/07/15	08 55		0.315	0.540	0.016	0.019	0.065
73/08/11	13 20		0.300	0.130	0.010	0.019	0.055
73/09/17	09 15		0.210	0.260	0.044	0.018	0.055
73/10/14	09 25		0.180	0.150	0.018	0.011	0.040
73/11/17	10 15		0.052	0.100K	0.016	0.024	0.030
73/12/20	08 15		0.264	0.300	0.024	0.016	0.050
74/01/12	09 30		0.240	0.300	0.024	0.024	0.065
74/01/26	09 25		0.240	0.100	0.020	0.016	
74/02/12	13 30		0.260	0.700	0.045	0.020	0.075

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4S04C1
34 23 30.0 082 08 30.0 4
NEEDY RIVER
45 LAURENS CO HWY H
T/GREENWOOD LAKE 030892
ST HWY BRDG 5 MI WNW OF WATTERLOO
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	14 05		1.100	0.990	0.480	0.240	0.340
73/03/21	10 30		0.880	0.650	0.105	0.072	0.165
73/04/15	10 30		0.940	0.480	0.090	0.160	0.250
73/05/15	11 20		1.200	0.920	0.076	0.240	0.345
73/06/17	10 40		1.300	1.680	0.084	0.240	0.320
73/07/15	09 25		1.500	0.760	0.062	0.176	0.255
73/08/11	13 50		1.200	0.695	0.036	0.310	0.490
73/09/17	09 45		0.750	0.700	0.063	0.088	0.192
73/10/14	09 55		1.320	0.700	0.039	0.370	0.490
73/11/17	10 45		1.760	0.750	0.076	0.650	0.780
73/12/20	08 50		1.090	0.900	0.180	0.240	0.360
74/01/12	10 00		1.090	0.700	0.140	0.200	0.315
74/01/26	09 55		1.060	0.800	0.112	0.176	0.370
74/02/12	14 00		1.300	1.100	0.165	0.230	0.375

STORET RETRIEVAL DATE 76/04/27

450401
34 23 00.0 082 06 30.0 4
RABON CREEK
45 LAURENS CO HWY N
T/GREENWOOD LAKE 030892
ST HWY 54 BRDG 4 MI NE OF WATERLOO
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	14	20	0.420	0.100K	0.025	0.016	0.025
73/03/21	10	40	0.320	0.340	0.020	0.019	0.050
73/04/15	10	40	0.380	0.100K	0.019	0.014	0.035
73/05/15	11	30	0.410	0.100K	0.015	0.017	0.040
73/06/17	10	50	0.450	1.260	0.035	0.022	0.050
73/07/15	09	35	0.390	0.407	0.043	0.017	0.055
73/08/11	14	00	0.360	0.130	0.014	0.028	0.060
73/09/17	10	00	0.252	0.255	0.040	0.020	0.060
73/10/14	10	05	0.242	0.100K	0.020	0.013	0.035
73/11/17	10	55	0.184	0.100K	0.016	0.005	0.017
73/12/20	09	05	0.430	0.10C	0.020	0.020	0.030
74/01/12	10	15	0.380	0.200	0.020	0.018	0.045
74/01/26	10	05	0.380	0.300	0.028	0.020	0.075
74/02/12	14	10	0.330	1.400	0.090	0.027	0.080

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4504E1
34 20 30.0 082 05 30.0 4
LONG LICK BRANCH
45 LAURENS CO HWY M
T/GREENWOOD LAKE 030892
ST HWY 307 BRDG 1.5 MI W OF WATERLOO
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	14	30	0.180	0.100K	0.025	0.021	0.037
73/03/21	10	50	0.140	0.140	0.005K	0.017	0.050
73/04/15	10	50	0.115	0.100K	0.013	0.020	0.045
73/05/15	11	45	0.210	0.100K	0.021	0.029	0.045
73/06/17	11	15	0.250		0.067	0.039	0.070
73/07/15	10	05	0.180	0.400	0.026	0.033	0.060
73/08/11	14	15	0.168	0.110	0.015	0.039	0.070
73/09/17	10	15	0.154	0.210	0.052	0.040	0.060
73/10/14	10	20	0.100	0.450	0.046	0.035	0.055
73/11/17	11	05	0.028	0.300	0.012	0.048	0.050
73/12/20	09	20	0.156	0.100	0.012	0.032	0.050
74/01/12	10	40	0.184	0.300	0.020	0.032	0.065
74/01/26	10	20	0.176	0.300	0.016	0.032	
74/02/12	14	25	0.224	0.800	0.060	0.035	0.095

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4504F1
34 17 30.0 082 02 00.0 4
CANE CREEK
45 LAURENS CO HWY M
T/GREENWOOD LAKE 030892
ST HWY 72 BRDG 3MI W OF CROSSHILL
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	14	45	0.160	0.110	0.042	0.019	0.030
73/03/21	11	05	0.096	0.290	0.016	0.024	0.065
73/04/15	11	00	0.038	0.600	0.038	0.025	0.090
73/05/15	12	00	0.034	0.540	0.093	0.019	0.075
73/06/17	11	30	0.025	1.300	0.030	0.015	0.055
73/07/15	10	20	0.010K	0.560	0.011	0.014	0.080
73/08/11	14	25	0.010K	0.830	0.009	0.016	0.080
73/09/17	10	30	0.016	1.150	0.034	0.010	0.085
73/10/14	10	35	0.072	1.150	0.063	0.017	0.040
73/11/17	11	20	0.016	0.100K	0.016	0.015	0.030
73/12/20	09	35	0.160	0.400	0.024	0.020	0.045
74/01/12	11	00	0.136	0.300	0.020	0.028	0.080
74/01/26	10	35	0.120	0.300	0.020	0.032	0.210
74/02/12	14	35	0.152	0.900	0.045	0.030	0.130

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4504AA PD4504AA P0028350
34 23 25.0 082 13 25.0 4
WARE SHOALS #2
45 GREENWOOD CO HWY
T/LAKE GREENWOOD 030892
SALUDA RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/31	10	00							
CP(T)-			1.887		0.179	1.451	2.600	4.700	4.500
73/06/01	10	00							
73/06/30	00	00							
CP(T)-			8.700	1.900	0.140	1.580	1.800	3.500	4.800
73/06/30	24	00							
73/07/20	09	00	5.700	3.300	0.110	1.400	1.500	5.300	5.000
73/08/17	10	00							
CP(T)-			3.200		0.240	0.440	1.400	5.900	5.500
73/08/18	10	00							
73/09/13	10	30	6.000	2.600	0.110	0.770	1.050	5.500	5.000
73/10/11	10	00	3.990	2.100	0.046	1.260	1.450	5.500	5.000
73/11/08	00	00							
CP(T)-			4.700	3.600	0.160	1.600	1.700	5.000	5.300
73/11/08	24	00							
73/12/07	00	00							
CP(T)-			0.540	5.200	0.036	2.040	2.100	4.900	4.500
73/12/07	24	00							
74/01/16	14	30	1.680	2.400	0.040K	2.300	2.300	4.000	3.800
74/02/14	00	00							
CP(T)-			0.040	2.700	0.054	2.800	2.800	4.000	3.500
74/02/14	24	00							
74/03/14	07	30							
CP(T)-			5.520	3.800	0.061	2.650	2.950	4.500	4.000
74/03/15	07	30							

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4504AB PR4504AB P001000
34 39 25.0 082 27 50.0 4
#EST PELZER
45 15 WILLIAMSTON
T/GREENWOOD RESERVOIR 030892
SALUDA RESERVOIR
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/02	14 00		0.126	15.400	7.030	5.870	7.200	0.070	0.080
73/07/03	15 00		0.230	24.000	14.700	10.100	12.000	0.090	0.080
73/08/15	16 00		0.310	32.000	15.800	0.135		0.090	0.080
73/09/10	16 00		0.046	34.000	18.100	15.200	16.000	0.085	0.080
73/10/07	16 00		0.040	22.000	11.600	11.000	12.000	0.070	0.080
73/12/10	16 00		0.120	24.000	9.800	6.700	9.650	0.065	0.070
74/01/16	16 00		1.000	17.000	8.450	7.150	9.200	0.080	0.075
74/03/12	16 00		0.040	15.000	0.110	0.130	9.200	0.090	0.080
74/04/14	16 00		1.120	6.600	5.900	3.800	4.700	0.075	0.080
74/06/20	16 00		13.400	1.275	0.157	4.542	10.300	0.070	0.080
74/08/28	16 30		0.640	7.000	0.060	0.380	6.100	0.085	0.080
74/09/20	16 30			2.525	0.540	11.500	11.600	0.085	0.080

STORET RETRIEVAL DATE 76/04/27

45048A PD45048A P001600
34 22 30.0 082 14 10.0 4
WARE SHOALS #1
45 GREENWOOD CO HWY
T/LAKE GREENWOOD 030892
TURKEY CREEK
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/01	09 00		0.154	6.500	1.080	4.030	4.650	0.100	0.100
73/06/30	00 00								
CP(T)-			0.045	5.000	0.094	1.440	1.900	0.250	0.250
73/06/30	24 00								
73/07/20	10 00		0.220	11.500	0.880	6.600	7.700	0.100	0.150
73/08/17	10 00		0.150	9.600	0.600	2.300	3.750	0.500	0.500
73/09/13	09 30		0.132	12.000	1.160	6.200	7.200	0.500	0.500
73/10/11	10 00		0.120	11.050	1.600	5.300	6.300	0.500	0.500
73/11/07	11 00		0.160	12.500	1.150	5.400	6.300	0.500	0.500
73/12/04			0.180	14.000	0.950	5.200	6.800		
74/01/16	09 30		0.360	12.000	1.800	8.200	9.200	0.036	0.040
74/02/13	10 00		0.160	12.000	2.880	7.600	8.900	0.072	0.072
74/03/14	08 30		0.168	11.000	3.947	2.331	3.162	0.036	0.040

STORET RETRIEVAL DATE 76/04/27

42<

4504CA TF4504CA P115000
3 47 50.0 082 22 00.0 4
GREENVILLE
45 15 GREENVILLE
T/LAKE GREENWOOD 030891
REEDY RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50050 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/31	09	10							
CP(T)-			0.090	17.000	5.100	6.900	6.500	22.500	18.700
73/06/01	09	10							
73/06/28	09	00							
CP(T)-			0.105	21.000	5.300	6.200	8.000	20.000	22.000
73/06/29	09	00							
73/08/14	08	30							
CP(T)-			0.039	17.600	0.960	6.400		21.200	26.000
73/08/15	08	30							
73/08/30	08	30							
CP(T)-				22.700	6.600	7.300	9.900	19.700	21.200
73/08/31	08	30							
73/09/26	09	00							
CP(T)-			0.120	25.900	8.650	7.800	9.800	18.100	25.500
73/09/27	09	00							
73/11/15	11	30							
CP(T)-			0.130	26.000	4.850	6.650	10.500	33.200	30.700
73/11/16	11	30							
73/12/19	10	00							
CP(T)-			0.440	18.000	0.460	6.400	9.450	23.500	28.000
73/12/20	10	00							
74/01/23	15	00							
CP(T)-			0.440	20.000	4.500	4.900	7.100	23.100	21.700
74/01/24	15	00							
74/02/27	13	30							
CP(T)-			1.480	19.000	1.500	5.800	7.700	20.100	19.200
74/02/28	13	30							
74/05/01			3.800	32.000	5.500	6.800	10.500	20.000	29.000
74/05/16	14	20							
CP(T)-			0.240	28.000	5.750	7.000	9.900	31.700	32.200
74/05/17	14	00							
74/06/06	13	00							
CP(T)-			0.040	18.000	3.900	4.550	6.300	32.600	33.000
74/06/07	13	00							
74/07/11	15	00							
CP(T)-			0.200	18.000	4.100	4.600	6.600	23.400	30.500
74/07/12	15	00							

STORET RETRIEVAL DATE 76/04/27

4504XA PD4504XA P004000
34 28 20.0 082 22 25.0 4
HONEA PATH
4S ANDERSON CO HWY
T/LAKE GREENWOOD 031392
BROAD MOUTH CREEK
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/19	09 45		0.750	4.600	2.097	1.900	2.100	0.180	
73/07/20			0.690	1.700	0.710	0.840	0.980	0.180	0.180
73/08/24	09 00		0.660	7.150	1.820	3.060		0.180	0.180
73/09/20	10 30		0.830	2.200	0.550	0.890	1.100	0.180	0.180
73/11/27	09 00		0.360	2.400	1.000	1.200	1.400	0.180	0.180
73/12/18			0.840	3.700	1.000	1.470	2.100	0.180	
74/02/22	14 30		0.840	3.200	0.770	1.280	1.600	0.180	0.180
74/03/20	10 00		0.640	2.600	0.980	2.200	3.100	0.180	0.180
74/04/18			0.720	1.000K	0.320	0.590	0.590	0.180	
74/05/24	09 00		0.640	12.000	2.200	2.900	4.400	0.180	
74/06/26	09 30		0.635	3.000	0.560	1.650	1.930		
74/08/16	09 00		0.760	2.850	0.510	0.050K	1.490	0.180	
74/09/30	09 00		0.780	1.500	0.600	0.925	1.150		0.180

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4504XB AP4504XB P001200
34 32 35.0 082 28 55.0 4
BELTON
45 ANDERSON CO HWY
T/LAKE GREENWOOD 030892
BROAD MOUTH CREEK
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/07	08	30	0.315	12.000	4.600	1.700	3.150	0.225	0.205
73/07/09	10	45	0.220	40.000	21.000	5.110	10.500	0.240	0.210
73/08/15	15	45	0.040	22.000	7.800	3.800	9.600	0.200	0.215
73/09/06	10	10				3.960		0.205	0.225
73/10/05	10	30	0.040	24.000	14.000	5.800	8.500	0.100	0.190
73/11/13	14	15	0.070	29.000	14.700	5.750	14.500	0.175	0.250
74/01/10	11	00	0.360	16.500	5.000	4.100	5.700	0.250	0.225
74/02/14	10	00	0.160	15.000	6.600	3.300	4.600	0.300	0.210
74/03/07	08	30	0.080	31.000	13.500	6.300	9.900	0.210	0.210
74/04/10	15	05	0.280	17.000	4.400	2.800	8.100	0.250	0.250
74/05/20	09	15	0.680	13.000	0.940	5.500	7.300	0.180	0.250